Mubashir Alam

Specialization

- A PhD in Electrical Engineering, with specialization in Digital Signal Processing (Statistical DSP, Sensor Array Processing, Biomedical Signal Processing and Radar Signal Processing).

Education

- **Georgia Institute of Technology, Atlanta, USA**   **August 2006**
  PhD, Electrical Engineering
  PhD Topic: Localization of Subsurface Targets using Optimal Maneuvers of Seismic Sensors
  Advisor: Dr James H. McClellan

- **Georgia Institute of Technology, Atlanta, USA**   **August 1999**
  Master of Electrical Engineering

- **NWFP University of Engineering & Technology, Peshawar, Pakistan**   **May 1996**
  Bachelor of Electrical Engineering
  83%, First Division, Communication Systems
  Rank 1/100

Work Experience

- **Assistant Professor**   Sept 2009 --   Present
  King Saud University
  Department of Electrical Engineering
  Riyadh, Saudi Arabia
- **Assistant Professor**   August 2006 -- August 2009
  FAST-National University of Computer and Emerging Sciences
  Department of Electrical Engineering
  Islamabad, Pakistan
- **Graduate Research Assistant (GRA)**   January 2003 – May 2006
  School of Electrical engineering, Georgia Institute of Technology
  Atlanta, USA
- **Graduate Teaching Assistant (GTA)**   August 1999 – December 2002
  School of Electrical Engineering, Georgia Institute of Technology
  Atlanta, USA

Publications

30 , "Comparison of DOA Algorithms for Target Localization in UCA FM Bi-Static Passive Radar,", M. Shoaib. R. Umar. M. Bilal. M. A. Hadi. **Mubashir. Alam** and K. Jamil, November 2023, IEEE International Radar Conference (RADAR), Sydney, Australia, 2023, pp. 1-6, **[Conf]**

29. "**Array Geometry Effects on Digital Beamforming for Multi-Channel Passive Radar Systems**,", **Mubashir. Alam,** 2022 IEEE 12th Symposium on Computer Applications & Industrial Electronics (ISCAIE), Penang, Malaysia , 2022, pp. 13-16**[Conf]**

28. "Adaptive Energy Concentration in Hyperthermia Treatment of Cancer", I. Elshafiey, A. Sheta, **Mubashir. Alam**, Nizam Uddin, W. M. Abdulkawi and W. A. Malik, In 2019 IEEE Asia-Pacific Conference on Applied Electromagnetics (APACE), Melacca, Malaysia , November 2019, pp. 1-5. **[Conf]**

27. "**Low-Cost Implementation of a Multiple-Input Multiple-Output Radar Prototype for Drone Detection** T. Al-Nuaim, **Mubashir. Alam** and A. Aldowesh, In the 61st International Symposium ELMAR-2019, Zadar, Croatia, pp. 183-186, 23-25 September, 2019. **[Conf]**

26. "Detection of Micro-UAVs using a Multiple-Input Multiple- Output Digital Array Radar"
,Tareq Al-Nuaim, **Mubashir Alam**, Abdulrazaq Aldowesh, ICRST 2019 : International Conference on Radar Science and Technology, Barcelona, Spain, August 15-16, 2019 . **[Conf]**

25. "Nearfield Imaging for Non-Invasive Monitoring of Hyperthermia Treatment", Ibrahim Elshafiey, N. Nizam-Uddin, Md Anowar Hossain, **Mubashir Alam** and Muhammad Naveed Tabassum , In American Institute of Physics (AIP), Conference Proceedings, 1806, 060006, 2017. **[Conf]**

24. "Maximum Likelihood (ML) Based Localization Algorithm for Multi-Static Passive Radar using Range-only Measurements", **Mubashir Alam** and Khalid Jamil
In IEEE Radar Conference, Johannesburg, South Africa, October 2015. **[Conf]**

23. "A Passive Bi-static Radar Experiment for Very Low Radar Cross-Section Target Detection",
Abdulrazaq Aldowesh, Mobien Shoaib, Khalid Jamil, Sami Alhumaidi and **Mubashir Alam**
In IEEE Radar Conference, Johannesburg, South Africa, October 2015. **[Conf]**

22. "Target Detection using Space-Time Adaptive Processing (STAP) and a Multi-Band, Multi-Channel Software Defined Passive Radar", **Mubashir Alam** , Khalid Jamil and Sami M. Alhumaidi
In IEEE/IET 12th European Radar Conference (EuRad) (43rd European Microwave Week) , Paris, France, September 2015. **[Conf]**

21. "Efficient Techniques to Enhance Nearfield Imaging of Human Head for Anomaly Detection," M. N. Tabassum, I. Elshafiey, and **Mubashir Alam**,
In 10th IEEE International Symposium on Medical Measurements and Applications (MeMeA), Torino, Italy, 7-9 May, 2015. **[Conf]**

20. "Enhanced Noninvasive Imaging System for Dispersive Highly Coherent Space," M. N. Tabassum, I. Elshafiey, and **Mubashir Alam**,
In 40th IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Brisbane, Australia, 19-24 April, 2015. **[Conf]**

19. "Compressed Sensing Based Near field Electromagnetic Imaging," M. N. Tabassum, I. Elshafiey, and **Mubashir Alam,**
In Proceedings of 4th IEEE International Conference on Control System, Computing and Engineering (ICCSCE), Penang, Malaysia, 28-30, November, 2014. **[Conf]**

18. "Innovative Nearfield Electromagnetic Imaging System," M. N. Tabassum, I. Elshafiey, and **Mubashir Alam**,
In Proceedings of IEEE International Conference on Smart Instrumentation, Measurement and Applications (ICSIMA), Kuala Lumpur, Malaysia, 25-27 November, 2014. **[Conf]**

17. "Improving Target Signature in Software Defined, Multi-Band, Multi-Channel Passive Radar",
Mubashir Alam , Khalid Jamil and Sami M. Alhumaidi
In the IEEE 2nd Saudi International Electronics, Communications and Photonics Conference, Riyadh, Saudi Arabia, April 2013. **[Conf]**

16. "High resolution direction finding using multi-band antenna arrays for passive bistatic radar systems", Khalid Jamil, Muhammad Abdul Hadi, **Mubashir Alam**, Majeed Alkanhal, Zeyad Alhekail
In the 2nd Advance Electromagnetic Symposium (AES), Sharjah, UAE, March 2013. **[Conf]**

15. "**FPGA implementation of space-time adaptive processing (STAP) algorithm for target detection in passive radars,**" Zia. U. Mahmood, **Mubashir Alam**, Khalid Jamil, and Zeyad. O. Al-Hekail
Progress In Electromagnetics Research (PIER) C, Vol. 35, pp: 35-48, 2013. **. [Jrnl]**

14. "A Multi-band Multi-beam software-defined passive radar part II: Signal Processing"
 Mubashir Alam, Khalid Jamil, Zeyed ,0. Alhekail, Sami Al-Humaidi
 In IET International Conference on Radar Systems, Glasgow, UK, October 2012 **[Conf]**

13. "A Multi-band Multi-beam software-defined passive radar part I: System Design"
Khalid Jamil, **Mubashir Alam,** M.H Hadi**,** Zeyed ,0. Alhekail,
In IET International Conference on Radar Systems, Glasgow, UK, October 2012 **[Conf]**

12. "On Modeling and Hardware Implementation of Space-Time Adaptive Processing (STAP) for Target Detection in Passive Bi-static Radar", Zia Ul Mahmood, **Mubashir Alam**, Khalid Jamil, and Mohammed Elnamaky
 In 11th International Conference on Information Science, Signal Processing and their Applications (ISSPA-2012), Montreal, Canada, pp:1013 -1017 July 2012 **[Conf]**

11. "Implementation of Space-time Adaptive Processing (STAP) for Target Detection in Passive Bi-static Radar", Zia Ul Mahmood, **Mubashir Alam**, Khalid Jamil, and Mohammed Elnamaky
In Progress in Electromagnetic Research Symposium (PIERS) Proceedings, Kuala Lumpur, Malaysia, pp: 724-726, March 2012. **[Conf]**

10. "Optimal maneuvering of Seismic Sensors for Localization of Subsurface Targets"
Mubashir Alam, Volkan Cevher , James H. McClellan, Gregg D. Larson, and Waymond Scott, Jr
In IEEE Transactions on Geosciences and Remote Sensing, Vol.45, No.5, pp:1247-1257, May 2007**. [Jrnl]**

9. "Spectrum analysis of seismic surface waves and its applications in seismic landmine detection",
Mubashir Alam, James H. McClellan, and Waymond R.Scott,Jr
In Journal of Acoustical Society of America (JASA), Vol.121, No 3, pp:1499-1509 March 2007**. [Jrnl]**

8. "Imaging and detector framework for seismic landmine detection"
Mubashir Alam and James H. McClellan
In Fourth IEEE Workshop on Sensor Array and Multi-Channel Signal Processing (IEEE-SAM), Waltham, USA , pp:88-92, August 2006. **[Conf]**

7. "Optimal Experiments with Seismic sensors"
Mubashir Alam, Volkan Cevher , and James H. McClellan
In 2006 IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP-2006) Toulouse, France, Vol.4, pp:VI-VI, May 2006. **[Conf]**

6. "Optimal Experiments with Seismic Sensors for the Localization of buried Landmines"
Mubashir Alam , Gregg Larson, James McClellan and Waymond Scott
In SPIE: Defense and Security Symposium, Orlando, Florida, USA. Vol. 6217 , April 2006. **[Conf]**

5."Near Field Imaging of subsurface targets using wideband multi-static RELAX/CLEAN algorithms",
Mubashir Alam and James H. McClellan
In 2005 IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP-2005) Philadelphia, USA, Vol.4, pp: 1097- 1100**,** March 2005. **[Conf]**

4."Near Field imaging of subsurface targets using active arrays and elastic waves"
 Mubashir Alam and James H. McClellan
 In 11th IEEE Digital Signal Processing Workshop, New Mexico, USA, pp: 216- 220, August 2004. **[Conf]**

3. "Time-reverse imaging for Detection of Landmines",
Mubashir Alam, James H. McClellan, Pelham Norville and Waymond R. Scott Jr
In Proceedings of the SPIE: 2004 Defense and Security Symposium, Orlando, Florida, USA. Vol 5415, April 2004. **[Conf]**

2. "Multi-Channel Spectrum Analysis of Surface Waves",
Mubashir Alam, James H. McClellan, and Waymond R.Scott,Jr
In IEEE 37th Asilomar Conference on Signals, Systems, and Computers, Pacific Grove, California, USA, Vol.1, pp:771-775, November 9-12, 2003. **[Conf]**

1. "**Surface-Wave-Based Inversions of Shallow Seismic Structure**"
 Gregg D.Larson**, Mubashir Alam**, James S.Martin, Waymond R.Scott,Jr, James H. McClellan, George S.McCall II, Phelam Norville, and Benjaman Declety
In Proceedings of the SPIE: 2003 Annual International Symposium on Aerospace/Defense Sensing, Simulation, and Controls, Orlando, Florida, USA. Vol. 5089, April 2003. **[Conf]**

Funded Research Project

- Real-time RF Signal Detection and Recognition with Direction-of-Arrival Capabilities (RF-DF),(PI, 800K SR, 12 Months, November 2024-2025, GADD)
- Ground Penetrating Radar Test Bed (Co-I, 428K SR, 12 Months, April 2015 -- April 2106, KACST)
- Wideband Applicator Array for Near field Imaging and Hyperthermia Treatment of Cancer(Co-I, 1.5 Million SR, 24 Months, Feb 2016 – Feb 2018, KACST**)**

MS Research Thesis Supervised

King Saud University, Riyadh, Saudi Arabia

- FPGA Implementation of Space-Time Adaptive Processing (STAP) Algorithm for Passive Bistatic Radar (Zia-ul-Mehmood, 2012)
- Enhanced Nearfield Three-Dimensional Electromagnetic Imaging Using Compressed Sensing (M. Naveed Tabassum, 2015)
- Micro-UAV Detection using a Collocated MIMO UWB Noise Radar (Tareq Yussef Al-Nuaim, 2019)

Awards and Distinctions
- Received Quaid-i-Azam Scholarship for higher studies abroad, funded by Govt. of Pakistan for first position overall, in Electrical Engineering (1997).
- Received Merit Scholarship for four years at NWFP University of Engineering & Technology, Peshawar Pakistan in Electrical Engineering (1991-96).
- Secured second position (overall) in B.Sc Electrical Engineering, NWFP University of Engineering & Technology, Peshawar, Pakistan (1996).
- Received Outstanding Graduate Teaching Assistant Award. School of Electrical & Computer Engineering, Georgia Institute of Technology, USA, 1999-2000.
- First position in order of merit in B.I.S.E Peshawar, Pakistan in Intermediate Examination (FSc, 1990).

Research Interests
- Sensor Array Processing
- Statistical Signal Processing

- Seismic Signal Processing
- Detection and Estimation Theory
- Passive Bi-static Radar (PBR)
- Cognitive and Software-Defined Radios (SDR)
- Biomedical Signal Processing

Professional Activities

- Member IEEE
- **Reviewer:** IEEE Transactions on Signal Processing, IEEE Transactions on Geosciences and Remote Sensing, Springer Journal of Signal, Image and Video Processing

Courses Taught
FAST National University of Computer and Emerging Sciences, Islamabad, Pakistan
- **Under-graduate:** Signal & System, Digital Signal Processing, Principle of Communication Systems.
- **Graduate:** Advance DSP, Signal Detection & Estimation, Stochastic Process in Engineering.

King Saud University, Riyadh, Saudi Arabia
- **Under-graduate:** Communication Principles, Computational Techniques in Electrical Engineering, Signal and System, Probability Theory with Engineering Applications, Circuit Analysis,
- **Graduate:** Modeling of Stochastic Engineering Systems, Signal Detection & Estimation, Advance Digital Signal Processing